

REMARKS

In the Office Action dated October 21, 2004, the Examiner rejects claim 21 under 35 U.S.C. § 112, first and second paragraphs. The Examiner rejects claims 1-3, 12-15, 17, 18 and 21 under 35 U.S.C. § 102(b) and rejects claims 4-11, 16, 19, 20 and 22 under 35 U.S.C. § 103(a). With this Amendment, claims 1, 3, 18 and 20 are amended. No claims are added or canceled. After entry of this Amendment, claims 1-22 are pending in the application. Reconsideration of the application as amended is respectfully requested.

With this Amendment, the Applicant has revised the abstract and submitted a Substitute Specification and a redline/strikeout version of the specification to show the changes made. It is respectfully submitted that the changes to the specification and abstract are merely grammatical and/or typographical in nature and merely conform the specification to the claims and drawing figures. The changes add no new subject matter to the Application as originally filed, and entry of the changes is respectfully requested.

Also with this Amendment, the Applicant has submitted replacement drawing sheets including changes to each of Figures 1-4, 6 and 7. In these figures, either reference numbers have been corrected for an element, missing reference numbers have been added to an element, or extraneous reference numbers have been removed. It is respectfully submitted that these changes have support in the specification, claims and drawing figures as originally filed and add no new matter to the Application. The Examiner's approval of the drawing figures is respectfully requested.

REJECTIONS PURSUANT TO 35 U.S.C. § 112

The Examiner rejects claim 20 under 35 U.S.C. § 112, first and second paragraphs, as the claim depended from itself. The Examiner correctly concluded that claim 20 was intended to depend from claim 18. With this Amendment, the Applicant has

changed the dependency of claim 20 from claim 20 to claim 18. It is respectfully submitted that this change address the Examiner's concerns under 35 U.S.C. § 112.

REJECTIONS PURSUANT TO 35 U.S.C. § 102

The Examiner rejects claims 1-3, 12 and 13 under 35 U.S.C. § 102(b) as being anticipated by Maiello et al. (US 5,732,691). Claim 1 has been revised to more particularly point out and distinctly claim the invention by stating that the burner inlet is for receiving air and gas and that the burner exhaust is for emitting exhaust gases generated by combustion of a mixture of the air and the gas within the burner. In addition, the blower is described as receiving inlet air and directly the inlet air to the inlet of the burner. In its dependent claim 3, the preamble has been amended to conform to the preamble of claim 1.

It is respectfully submitted that the Examiner has failed to show that Maiello et al. includes an elongated radiant heating tube having an inlet for receiving the exhaust gases emitted by the burner as required by claim 1. The Examiner equates this feature to the heat exchanger 22, but the heat exchanger shown in Maiello et al. is merely a "black box." There is no teaching or suggestion that this is an elongated radiant heating tube as required by the claim. In addition, Maiello et al. fails to teach or suggest the blower of claim 1. The Examiner states that the supply blower 24 of Maiello et al. is a blower. However, the supply blower 24 does not deliver any air flow to the fuel burner 26 at all. The supply blower 24 merely draws return air 32 and forces that air upwardly across the heat exchanger 22, where combustion heat warms the air prior to the heated air being blown from the furnace. (Maiello et al., col. 4, ll. 30-38). Elsewhere in Maiello et al., a two-speed draft inducer fan 34 is described. However, that fan 34 has an inlet 38 communicating with the interior of the heat exchanger 22 and an outlet 40 connected with a vent stack 42 and operates to withdraw cooled combustion gases within the heat exchanger 22. (Maiello et al., col. 4, ll. 39-45). Maiello et al. fails to teach or suggest a blower receiving inlet air and directing the inlet air to the inlet of the burner wherein the

blower comprises a two stage blower having a low speed for delivering a low air flow to the burner and a high speed for delivering a high air flow to the burner. Thus, claim 1 and its dependent claims are allowable over the prior art of record.

In addition to the foregoing, it is respectfully submitted that the Examiner has failed to find the feature of claim 2 wherein the blower includes an electric motor having a low winding corresponding to the blower low speed and a high winding corresponding to the blower high speed. The Examiner considers that the electric switches 50 and 52 anticipate the low winding and the high winding because both the switches and the windings "electrically change the blower speed by implication." First, the Examiner has misapplied the test for anticipation. Each element from the claim must be found in the reference. A switch is not a winding regardless of whether it purportedly performs the same function. Second, the switches 50, 52 do not perform the recited function in any case. The switches 50, 52 can be either open or closed whether the fan speed is low or high because the operation of the switches depends upon the pressure conditions within the interior of the fan 34, not the speed. (Maiello et al., col. 5, line 64 to col. 6, line 25). It is respectfully submitted that claim 2 is also allowable over the prior art of record since the prior art of record fails to teach or suggest all the features therein.

The Examiner rejects claims 14, 15 and 17 under 35 U.S.C. §102(b) as being anticipated by Maiello et al. This rejection is respectfully traversed. Maiello et al. does not teach or suggest a radiant heating tube receiving the exhaust gases from the burner and converting the exhaust gases into radiant heat. The Examiner indicates that the heat exchanger 22 is a radiant heating tube, but as described previously, the "black box" of Maiello et al. provides no indication of the components of the heat exchanger 22. In addition, Maillo et al. fails to teach or suggest the feature of a two stage blower operative to deliver air to the burner at either a low level or a high level. As mentioned previously, the supply blower 24 merely forces air across the heat exchanger 22. (Maiello et al., col. 4, ll. 30-38). It is not a two stage blower, and it is not operative to

deliver air to the burner at either a low level or a high level. The two-speed draft inducer fan 34 is connected to the heat exchanger 22 and withdraws cooled combustion gases within the heat exchanger 22. (Maiello et al., col. 4, ll. 39-45). It is not operative to deliver air to the burner at either a low level or a high level as required by claim 14 and its dependent claims. It is respectfully submitted that the invention of claim 14 and its dependent claims is patentable over the prior art of record.

In addition to the foregoing, Maiello et al. fails to teach the feature of claim 17 wherein the blower includes a motor having a low winding corresponding to the low level blower operation and a high winding corresponding to the high level blower operation for the reasons stated with respect to claim 2. Thus, claim 17 is allowable over the prior art of record.

The Examiner rejects claim 18 under 35 U.S.C. § 102(b) as being anticipated by Maiello et al. Claim 18 has been revised to more particularly define and distinctly claim the invention by clarifying that the burner has an inlet for receiving air and gas. In addition, the step of providing a two stage blower has been clarified to state that the blower has a low speed for delivering a low air flow to the inlet of the burner and a high speed for delivering a high air flow to the inlet of the burner. Maiello et al. fails to teach or suggest, *inter alia*, the step of claim 18 of providing a two stage blower having a low speed for delivering a low air flow to the inlet of the burner and a high speed for delivering a high air flow to the inlet of the burner. As mentioned previously, the supply blower 24 merely forces air across the heat exchanger 22. (Maiello et al., col. 4, ll. 30-38). The two-speed draft inducer fan 34 withdraws cooled combustion gases within the heat exchanger 22. (Maiello et al., col. 4, ll. 39-45). Neither is the two stage blower described in claim 18. It is respectfully submitted that claim 18 is allowable over the prior art of record.

The Examiner rejects claim 21 under 35 U.S.C. § 102(b) as being anticipated by Seel (US 5,211,331). This rejection is respectfully traversed. The

Examiner directs the Applicant's attention to col. 4, ll. 61-67 for the teaching of a temperature differential. Therein, Seel indicates that the temperature difference is the indoor temperature less the outdoor temperature at 99 percent, 90 percent, 80 percent, 70 percent and 60 percent occurrence levels (on a historical basis for the region). Under the Examiner's interpretation, i.e., where the temperature differential is the indoor temperature minus the outdoor temperature, the reference completely fails to teach or suggest the step of defining a temperature threshold as the temperature setpoint minus the temperature differential and using that threshold in accordance with the remaining steps of claim 21. In Seel, the set point is SP, and the microprocessor uses the algorithm at col. 6, line 5. The algorithm does not define or use a temperature threshold where the temperature threshold is the temperature setpoint SP minus any temperature differential. The instantaneous indoor temperature t_i is subtracted from SP in the algorithm, and the correlation function of SP minus the instantaneous outdoor temperature t_o is used as another variable in the algorithm. Neither the instantaneous indoor temperature t_i or the instantaneous outdoor temperature t_o is a temperature differential. It is respectfully submitted that claim 21 and its dependent claim 22 is allowable over the prior art of record.

REJECTIONS PURSUANT TO 35 U.S.C. § 103

The Examiner rejects claims 4-11, 16 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Maiello et al. in view of Caruso et al. (US 5,989,011). The Examiner states that Maiello et al. teaches all the features of their respective independent claims and teaches all the additional features of these claims except for the two valves and the two parallel paths convergence. The Examiner states that Caruso et al. is considered to teach these features at col. 4, ll. 12-64 and that it would have been obvious to one skilled in the art to combine the teachings "for the purpose of allowing multiple flow paths for blower speed variability such that the blower load is evenly distributed." It is respectfully submitted that each of these claims is dependent from an allowable claim and,

as such, each is allowable over the prior art of record for the reasons stated with respect to their respective independent claims.

Further, it is respectfully submitted that the Examiner's purported motivation for combining the cited references does not rely on the prior art, as is required in an obviousness rejection, but is instead motivated by impermissible hindsight reconstruction. The Examiner states that the motivation is to allow multiple flow paths for blower speed variability such that the blower load is evenly distributed. However, nothing in either reference indicates that the inclusion of valves for controlling gas flow from a source to a burner would have any effect at all on blower load.

Even if there were some motivation other than hindsight to combine the references, it is respectfully submitted that the Examiner has misunderstood the teachings of Caruso et al. The Applicant has carefully reviewed Caruso et al., and the only valve the Applicant is able to find therein is valve 44. It is respectfully submitted that the combination cannot teach or suggest a feature if that feature is not found in either reference. It is respectfully submitted that the combination of Caruso et al. with Maiello et al. does not render obvious the invention as described by each of claim 4 and claim 16, which include the feature wherein the gas flow control assembly includes two valves for controlling gas flow from a source to the burner, or the invention of claim 20, which includes the feature wherein the regulator has two valves operating in parallel and wherein the method includes the step of opening one valve and closing one valve when the regulator is operating at the low setting and opening both valves when the regulator is operating at the high setting. The combination also fails to teach or suggest the features of claims 5-11, which depend from claim 4. Thus, claims 4-11, 16 and 20 are allowable over the prior art of record.

The Examiner rejects claim 19 under 35 U.S.C. § 103(a) as being unpatentable over Maiello et al. in view of Seel. The Examiner states that Maiello et al. teaches all the features of claim 19 except for the claimed temperature differential blower

speed control. The Examiner further states that Seel is considered to disclose these features in accordance with the rejection of claim 21 above for the reasons stated in that rejection. Claim 19 depends from claim 18 and is thus allowable over the prior art of record for the reasons stated with respect to claim 18. In addition, claim 19 adds certain features similar to those in claim 21. It is respectfully submitted that Seel fails to teach or suggest the step of claim 19 of defining a temperature threshold as the temperature set point minus the temperature differential and the remaining steps of operating the blower in accordance with the calculated temperatures for the reasons stated with respect to claim 21. Claim 19 is thus allowable over the prior art of record.

The Examiner rejects claim 22 under 35 U.S.C. § 103(a) as being unpatentable over Seel in view of Maiello et al. The Examiner states that Seel discloses the invention of claim 22 except for the feature wherein the method includes the further step of operating the regulator at a high level when the blower is operating at the high level and operating the regulator at a low level when the blower is operating at a low level. The Examiner further states that Maiello teaches this feature and it would have been obvious to one skilled in the art to include this feature in Seel for the purpose of "allowing precise gas regulation variability such that the burner operation based on temperature sensing such that a burner heat load is evenly distributed."

This rejection is respectfully traversed. The proposed combination of Seel and Maiello et al. still fails to teach or suggest all the features of claim 21, from which claim 22 depends. In addition, the Examiner has failed to point to the location in Seel or Maiello et al. wherein there is a teaching of another feature of claim 22, the teaching wherein the gas flow control assembly is a two stage regulator. Even if the Examiner were to find such a feature in the art, there is no motivation to include the features of claim 22 in the invention of Seel. Claim 21 is allowable over the prior art of record.

CONCLUSION

It is respectfully submitted that this Amendment traverses and overcomes all of the Examiner's objections and rejections to the application as originally filed and previously amended. It is further submitted that this Amendment has antecedent basis in the application as originally filed, including the specification, claims and drawings, and that this Amendment does not add any new subject matter to the application. Reconsideration of the application as amended is requested. It is respectfully submitted that this Amendment places the application in suitable condition for allowance, notice of which is requested.

If the Examiner feels that prosecution of the present application can be expedited by way of an Examiner's amendment, the Examiner is invited to contact the Applicant's attorney at the telephone number listed below.

Respectfully submitted,

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Amendments to the Drawing:

In Fig. 1, the reflector 16 and the radiant tube 14 have been labeled.

In Fig. 2, the additional label 12 for the housing has been removed.

In each of Fig. 2 and Fig. 3, the reflector has been relabeled from 22 to 16.

In Fig. 3, the front wall 12a of the housing has been labeled.

In Fig. 4, the sidewall of the housing 26 has been relabeled to 26c from 26a. The label 22 has been added to the gas flow control assembly. The label 12a, incorrectly directed to the spoke or vane 18c, has been removed.

In Fig. 6, the rear wall of the housing 12 has been relabeled to 12d from 12b. In addition, the cap screw 32g and vent 32i have been labeled.

In Fig. 7, the spellings of room temperature and of programmed differential have been corrected.

Attachments: Five (5) Replacement drawing sheets